Minutes for 5-16-02 WG4 Telecon

Participants ????? check with Jonathan

Steve Creaghan(Volpe Center)
Rose Ashford
Michael Petri (FAA)
Lee Etnyre (UPS-AT)
Steve Koczo (Collins)
Joel Wichgers (Collins)
Jonathan Hammer (CAASD)
Ganghuai Wang (CAASD)
Jerry Anderson (FAA)

Discussion

Introduction / Misc

Rose is having difficulty printing out the ASSA fault trees.

Rose is having difficulty completing the CSPA application description by June. She will provide a draft by June with completed document by July meeting.

Jonathan comment on schedule and pace of work.

ASSA Analysis work presented by Joel Wichgers

- Reviewed Table of Comments
- Rose's comment about apps description prior to analysis document. Joel gave application overview in his analysis document.
  Jonathan – the material will be together, but it may be fine to repeat material.
  Joel – First 5 paragraphs in Chapter 1 .1 summarize apps description.
- Jonathan – avoid redundancy and repetition. Some material could actually be moved forward into the application description.
- Jonathan on Figure 1-2 about alerting system. Recommends to delete it, since it will raise a red flag.
- Concerning the visibility conditions: ASSA is visual operation, visibility conditions go beyond that. Visibility conditions 3 and 4 go well beyond ASSA. Q to Jerry A.: Would displays be turned off in visibility conditions 3 and 4. Can it be used as a supplement?

  Action Item for Joel to check with WG1.
- Jonathan: does this affect the analysis and hazard analysis if we use it in visibility conditions 3 and 4?
- Jonathan on TLS section 1.1.5: We used 10-9 as our number based on DO-264 and AC 25-1309.

Joel indicated that 10-9 is for individual systems, and then one assumes e.g., 100 number of systems which lowers the number perhaps to 10-7. The operation is a different issue..

Steve K – PRM used some numbers for accident numbers. We should look into how that affects our numbers. OK City folks are very knowledgeable on that analysis and may be able to give perspective.

Joel – It's either 10-8 or 10-9. We need to determine this.

4x10-8 is target level of safety for approaches.

Rose referred to JAI *** document.

Jerry Anderson action – to examine just how the FAA views these number (1x10-9 or 5x 10-9)

- Editorial Notes on Sections 1.1.6 on where Benefits should be included.
- Editorial Note on Section 1.1.2 Joel.
- Section 1.4 FMEA Analysis: Jonathan likes Joel's approach and is considering adopting it in for ASIA. Joel grouped failure modes in categories, i.e., missing information, misleading information, etc. Jonathan asked for feedback on Joel's approach and Dave Spencer to performing the
- Lee commented on the need to capture the safety benefits of the specific ASA application (in this case ASSA) in the fault tree.

  We discussed the 'good/credit' and 'bad/debit' contributions by the application to the fault tree. (p. 24 Figure 1-8, the left most gate on O/S crew error, and the upper right most gate). The middle input to the top OR gate in the tree doesn't get involved in the sensitivity analysis.

  Jonathan would like to see numbers applied and/or evaluate the sensitivities. Jonathan isn't sure of what the utilities of the trees are without quantitative numbers. Joel was intending to avoid putting number on these branches due to the difficulty of arriving at number.

  Steve agreed that we should try to put some numbers to the tree and determine sensitivities.

  Determine safety and benefit of ASSA, in order to make the sufficiency arguments.

  Jonathan: we could put some numbers in the fault trees based on historical data. This allows us to evaluate the safety benefits offered by ASSA, and allows us to make the sufficiency argument.
- Section 1.5.1: Jonathan commented that the hazards and failures captured by the Safety Tables and FMEA should be captured in the fault trees somewhere.

Jonathan: We need to clearly describe and define the terms and interrelationships of basic events, hazards, operational consequences, etc. in an introductory section prior to all of the application appendices. WG4 Action. There should be a mapping of the failure modes / operational hazards and the fault trees. Joel to add an editorial note to consider this material for the introductory section, with some revisions.

- Jonathan comment: Should put numbers on fault trees as best as we can. Ensure ability to map fault tree to requirements.
- Jonathan: Do we want to consider the DEGRADED Information case in the fault trees or should we treat it as falling below the required Service Level to perform the procedure? This question should be kicked back to WG1 (this is a human factors issue on the extent of how degraded data should be handled). Put a note in the text, and bring this to the attention of WG4. (Jonathan is putting it on the WG4-WG1 coordination list). Joel will propose a strawman on how to use degraded information to the group.
- Joel took the action to update the fault trees to capture the basic events discussed at the May meeting in Cedar Rapids.
- Section 1.6: Joel indicated still some TBDs to be addressed. The text captures the approach.

  Lee asked whether latency is captured in 'accuracy'. Joel indicated that he will specify position accuracy, and allowable latency, and allowable velocity error, in accordance with the Chapter 2 ASA parameters.
- Joel is taking the approach of assessing airport database dimensions to determine accuracy requirements. He favors displaying actual positions rather than adjusting the position to where the system thinks the aircraft may be.
- Joel Editorial Comment: It would be nice to put the document in the correct format immediately, e.g., with the correct Appendix reference. This was agreed to. The tentative order for the applications was selected as follows:

  Appendix E1 – Enhanced Visual Acquisition
  Appendix E2 – Conflict Detection
  Appendix E3 – Enhanced Visual Approach
  Appendix E4 – ASSA
  Appendix E5 – FAROA
  Appendix E6 – ASIA
  Appendix E7 – CSPA
  Appendix E8 – CD&R

  For each of these appendices, the Application Description will be Appendix E1.1 (for Enhanced Visual Acquisition) and the Analysis work as Appendix E1.2.

End of Minutes for 5/16/02 Telecon